


PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SMR/P550569PC		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/02525	International filing date (day/month/year) 12.06.2003	Priority date (day/month/year) 13.06.2002	
International Patent Classification (IPC) or both national classification and IPC D06N7/00			
Applicant MILLIKEN INDUSTRIALS LIMITED et al			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 09.01.2004		Date of completion of this report 02.08.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Schambeck, W Telephone No. +49 89 2399-2135	



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB 03/02525

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-22 as originally filed

Claims, Numbers

1-31 filed with telefax on 12.07.2004

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-31
	No: Claims	
Inventive step (IS)	Yes: Claims	1-31
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-31
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 03/02525

According to the wording of independent claim 1, a floor mat with a tufted pile textile surface and an elastomer backing is to be made by mixing elastomer crumbs and a binder, depositing the crumb/binder mixture in a layer, placing a textile surface element that includes tufts of yarn on the elastomer layer and pressing the assembly thus obtained **in a heated press having an inflatable diaphragm**.

According to the applicants' submissions in the proceedings under Chapter II PCT, "a heated press with an inflated diaphragm is used to press the mat assembly, this type of press being much gentler than flat plate presses or press rollers, so helping to avoid flattening of the tufted pile fabric" and "as a result, the pile of the textile surface is not flattened and the mat as it emerges from the press has a good dust retention performance and is commercially acceptable for sale in its manufactured state".

No disclosure can be found in the documents cited in the search report of a method of making a floor mat as defined in independent claim 1, let alone any technical information which might have made foreseeable the technical success said to have been achieved.

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Claims

1. A method of making a floor mat with a tufted pile textile surface and an elastomer backing, the method including mixing elastomer crumbs and a binder, depositing the crumb/binder mixture in a layer, placing a textile surface element that includes tufts of yarn tufted into a tufting substrate on the layer to form a mat assembly, and pressing the mat assembly in a heated press having an inflatable diaphragm while setting the binder, so that the elastomer crumbs are consolidated to form an elastomer backing that includes voids between the elastomer crumbs, and the textile surface element is bonded to the elastomer backing, wherein the mat assembly is pressed at a pressure in the range 2-8 psig (14-55 kPa) and at a maximum temperature of up to 200°C, to form a backing with a density in the range 0.5 to 0.9g/cm³.
2. A method according to claim 1, wherein the mat assembly is pressed such that the thickness of the elastomer backing is in the range 60-100%, preferably 65-80%, of the thickness of the unpressed crumb/binder layer.
3. A method according to any one of the preceding claims, wherein the mat assembly is pressed at a maximum temperature in the range 110°C to 140°C, and most preferably approximately 125°C.
4. A method according to any one of the preceding claims, wherein the mat assembly is pressed in a plurality of stages including a low temperature stage and a higher temperature stage.
5. A method according to claim 4, wherein the binder is selected from the group comprising thermosetting and water curable polymeric materials and mixtures thereof, and the mat assembly is pressed in a plurality of stages including at least one low temperature stage followed by at least one higher temperature stage.
6. A method according to claim 4, wherein the binder is selected from the group comprising thermoplastic polymeric materials, hot melt binders and mixtures thereof, and the mat assembly is pressed in a plurality of stages including at least one high temperature stage followed by at least one lower temperature stage.
7. A method according to any preceding claim, wherein the press includes a plurality of zones, including a low temperature zone and a higher temperature zone.

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8. A method according to claim 7, wherein the mat assembly is transported through the press in a plurality of steps, so that it is pressed sequentially in each of the plurality of zones.
9. A method according to any one of the preceding claims, wherein the mat assembly is transported through the press on a conveyor.
10. A method according to claim 9, wherein the crumb/binder mixture is deposited on the conveyor using a spreader device that moves at a constant speed relative to the conveyor.
11. A method according to claim 10, wherein the spreader device includes a vibrating doctor blade.
12. A method according to any one of the preceding claims, wherein a continuous textile element is laid on the crumb/binder layer.
13. A method according to any one of claims 1 to 11, wherein separate textile elements are laid consecutively on the crumb/binder layer.
14. A method according to any one of the preceding claims, wherein mat borders are produced by spreading the crumb/binder mixture over a larger area than the textile element or elements.
15. A method according to any one of the preceding claims, wherein the elastomer crumb is crumbed vulcanised rubber, preferably nitrile rubber.
16. A method according to any preceding claim, wherein that the elastomer backing has a bulk density in the range 45 to 70%, preferably 55 to 70%, of the solid density of the elastomer crumb material.
17. A method according to any preceding claim, wherein the backing has a density in the range 0.7 to 0.9g /cm³.
18. A method according to any preceding claim in which the backing has a thickness of at least 1 mm.
19. A method according to any preceding claim in which the crumb size is less than 5 mm diameter and is preferably substantially in the range 2 to 4 mm.
20. A method according to any preceding claim in which the crumb/binder mixture includes at least 10% by weight powdered elastomer crumb.
21. A method according to any preceding claim in which the crumb/binder mixture includes from 2 to 20% by weight of binder.

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22. A method according to claim 21, in which the crumb/binder mixture includes less than 1% by weight powdered elastomer crumb and from 2 to 12% of binder.
23. A method according to claim 22, wherein the crumb/binder mixture includes at least 10% by weight powdered elastomer crumb and from 9 to 20%, preferably about 14%, of binder.
24. A method according to any preceding claim in which the binder is a polyurethane MDI binder.
25. A method according to claim 24 in which the binder is selected from the group consisting of 4,4-methylene di-p-phenylene isocyanate (MDI) polyurethane one- and two-component adhesives.
26. A method according to claim 24 in which the binder is a solvent free one component polyurethane adhesive.
27. A method according to any one of claims 1 to 23 in which the binder is a hot melt binder.
28. A method according to any preceding claim in which the crumb/binder mixture includes powdered additives selected from the group consisting of anti-microbial additives, anti-flammability additives, pigments, such as iron oxide, and anti-static additives, such as carbon fibres.
29. A method according to any preceding claim, characterised in that the textile surface comprises a knitted, woven or non-woven textile.
30. A method according to any preceding claim, wherein an edging strip is bonded to the elastomer backing adjacent at least one edge thereof.
31. A method according to claim 30, wherein the textile surface element partially overlaps and is bonded to the edging strip.

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